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EXAMINER

JULES, FRANTZ F

ART UNIT PAPER NUMBER

3617

DATE MAILED: 07/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/728,344

Applicant(s)

RAMU, KRISHNAN

Examiner

Frantz F. Jules

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12 and 14-20 is/are rejected.
- 7) ☒ Claim(s) 11 and 13 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7, 12, 14-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 7, line 4, the phrase "respective error values" is confusing as it is unclear how it relates to previously recited respective error values above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 5,936,373) in view of Saufferer (US 3,934,183).

Li et al disclose a multiphase switched translation system including a first linear switched reluctance machine ("LSRM") having a stator and a translator configured, positioned and proportioned for electromagnetic engagement with each other, the system comprising means for selectable application of at least one phase of a multiphase DC excitation to said LSRM as disclosed in col 4, lines 13-17 to thereby produce a longitudinal and a normal force between said stator and said translator.

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means for substantially simultaneous application of at least two phases of said multi-phase excitation to said LSRM to thereby produce a selectable normal force between said stator and translator as disclosed in col 4, lines 16-25.

Li et al discloses all of the features as disclosed above but does not disclose a linear switched reluctance machine. The general concept of applying multiphase translation system to a linear switched drive system is well known in the art as illustrated by Saufferer which discloses the teaching of a linear switched reluctance motor. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Li et al to incorporate the use of a multiphase translation system to a linear switched reluctance system in order to achieve high velocity rail vehicle as disclosed in col. 1, lines 29-32.

Claim 3

Regarding using eight poles and windings of four phases in a translator as recited in claim 3, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Li et al and Saufferer to include the use of eight poles and windings of four phases in a translator in his advantageous system, as translator winding sizing is a common and everyday occurrence throughout the linear switched system design art and the specific use of eight poles and windings of four phases in a translator would have been an obvious matter of design preference depending upon such factors as the weight of the object to be carried by the system, the yield strength of the side translator material, the targeted speed of the system; the ordinarily skilled artisan choosing the best stress profile corresponding to a particular loading imposed on the system which

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would most optimize the cost and performance of the device for a particular application at hand, based upon the above noted common design criteria.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 5,936,373) in view Saufferer (US 3,934,183), as applied to claim 1 and in view of Zellman (US 5,315,224).

Li et al and Saufferer teach all the limitations of claim 4 except for means for measurement of an absolute position of the translator relative to the stator. The general concept of providing means for measurement of an absolute position of the translator relative to the stator of a linear variable reluctance machine is well known in the art as illustrated by Zellman which discloses the teaching of means for measurement of an absolute position of the translator relative to the stator, see col 1, lines 25-30. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Li et al and Saufferer to include the use of means for measurement of an absolute position of the translator relative to the stator in his advantageous reluctance system in order to provide relative positional information of the translator.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 5,936,373) in view Saufferer (US 3,934,183), as applied to claim 1, and in view of Cooper (US 4,313,135).

Li et al and Saufferer teach all the limitations of claim 5 except for a multiphase translation system comprising means for measurement of currents associated with each phase. The general concept of providing means for measurement of currents associated with each phase falls within the realm of common knowledge as obvious

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mechanical expediency as illustrated by Cooper which discloses the teaching of a phase detector that supply information of each phase. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Li et al to include the use of means for measurement of currents associated with each phase in his advantageous multiphase translation system in order to monitor the condition of the phase voltage thereby improving the performance of the system.

7. Claims 6, 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 5,936,373) in view Saufferer (US 3,934,183), as applied to claim 1, and in view of Zellman US (5,315,224) and Kliman et al (US 4,896,089).

Li et al and Saufferer teach all the limitations of claims 6, 8-10 except for a multiphase translation system comprising means for comparing currents to command values including error monitoring means. The general concept of providing means for comparing currents to command values is well known in the art as illustrated by Zellman which discloses the teaching of means for comparing currents to command values, see col 7, lines 14-17. Also, the general concept of providing error monitoring means to a multiphase translation system is well known in the art as illustrated by Kliman et al which discloses the teaching of a fault management system for a multiphase variable reluctance motor. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Li et al and Saufferer to include the use of means for comparing currents to command values in his advantageous multiphase translation system as taught by Zellman in order to obtain the maximum torque or force to drive the translator. In addition, it would have been obvious to one of ordinary skill in the art at

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the time of the invention to modify Li et al and Saufferer to include the use of means for monitoring error values in his advantageous multiphase translation system in order to detect and isolate errors thereby ensuring continuous operation of the system.

Allowable Subject Matter

8. Claims 7, 12, 14-20 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

9. Claims 11, 13 are objected to as being dependent upon a rejected base claim, , but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Roshala, Barthalon et al, Inagaki, Jarret et al and Byrne et al are cited to show related control system for linear reluctance motor.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frantz F. Jules whose telephone number is (703) 272-6681. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph S. Morano can be reached on (703) 272-6684. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frantz F. Jules
Primary Examiner
Art Unit 3617

FFJ

July 15, 2005

FRANTZ F. JULES
PRIMARY EXAMINER
